

**REMARKS**

The Applicant respectfully requests reconsideration of the present application.

**I. Status of the Claims**

Claims 1 and 20 are amended for minor editorial changes. No new matter is introduced, and claims 1, 2, 4, 5, 8-13, and 17-28 are currently pending to be examined on their merits.

**II. Claims Rejections – 35 U.S.C. § 103**

Claims 1, 2, 4, 5, 8-13, and 17-28 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over WO 02/13628 (“Aymard”) or EP 765605 (“Baxter”) in view of US 2005/004926 (“Windhab”) and US 6,38,3456 (“Hartel”). The Applicant respectfully traverses these rejections.

*(i) Windhab is not prior art*

Windhab is not prior art, and thus the Office’s rejections over Windhab’s teachings are improper. The present application is entitled to the **January 6, 2004** priority date of the French Application (FR) 0400044 via the PCT application PCT/FR2005/000011. Such priority information is reflected on the cover page of the present Specification as published and also in the body of the Specification, as amended in the July 6, 2006 Preliminary Amendment. The Office has acknowledged receipt of a certified copy of the priority application in the Office Action dated June 8, 2009 (see Office Action Summary, section 12).

Windhab has a filing date of May 10, 2004, which is **after** the January 6, 2004 priority date of the present application.

Thus, Windhab is not prior art, and all the rejections related thereto are improper and thus should be withdrawn.

(ii) The teachings of Aymard, Baxter, Windhab, and/or Hartel do not render the present claims obvious

Even assuming, *arguendo*, that Windhab were considered as prior art (which should not be), the present claims would not be obvious over the teachings of Aymard, Baxter, Windhab, and/or Hartel.

**Aymard**

Aymard discloses a device comprising at least a pump HPP for circulation of a solution with a water phase and fat phase (*see* Aymard, p. 13, lines 12-13) in a circuit comprising a heat exchanger 15, formed from at least a tube in contact with a cooling circuit (Aymard, p. 13, lines 13-16). The exchanger 15 of Aymard comprises static mixing means STMX. However, the circuit of Aymard does **not** comprise static means to maintain supercooling in order to delay the appearance of crystals, as recited in present claim 1.

The Applicant respectfully submits that the term "supercooling" in the present claims refers to a situation when a given substance (e.g., water) is in a **meta-stable state**; namely, the substance is in an unexpected state for a given set of temperature and pressure. For example, under a certain condition of temperature and pressure for supercooling, water, for instance, would still be in the liquid state, as opposed to being in the solid state as it normally would in a non-supercooled state. *See e.g.*, present Specification, p. 1, lines 1-22.

Aymard's teachings do not relate to supercooling. In fact, Aymard's disclosure does not even mention the term "supercooling." Accordingly, the solution of Aymard is in a non-supercooled, liquid state under the given the temperature and the pressure in the exchanger 15. The Applicant respectfully submits that the Office has misconstrued Aymard's teachings with respect to the cooling circuit "STMX." Office Action, p. 2. Specifically, contrary to the Office's assertion, the STMX mixer of the heat exchanger 15 is to **dissolve a gas** introduced in the solution, while keeping a reasonably low temperature with low shearing. *See* Aymard, p. 13, lines 10-19. This has little to do with "maintaining supercooling," as recited in present claim 1.

The Applicant further respectfully traverses the Office's characterization of the internal wall ("internal surface") of the exchanger (as seen on the figures) as designed for maintaining supercooling. At the outset, the Applicant respectfully submits that the drawings are only schematics, and the "roughness" of the internal walls of the exchanger, as alleged by the Office on p. 3 of the Office Action, is not disclosed on p. 12, lines 23-30 of Aymard. Specifically, Aymard does not teach or suggest a non-stick coating taking the form of a material and/or of a surface state, as recited in present claim 1.

Additionally, the Applicant respectfully submits that the Office has mischaracterized Aymard's teachings by asserting that the device of Aymard discloses a zone comprising static supercooling rupture means to allow the appearance of crystals. Office Action, p. 3. As explained above, Aymard does not teach or suggest supercooling. The expander DET of Aymard also does not promote formation of the crystals, as recited in present claim 1. Specifically, the expander DET of Aymard only allows forming strips of aerated composition (*see* Aymard, p. 13, line 35 to p. 14, line 8). The expander does not promote the crystallization, as evidenced in that the expander can be cancelled from the device (*see* Aymard, p. 16, lines 26-27).

Thus, Aymard does not teach or suggest every element in present claim 1, or its corresponding dependent claims.

### **Baxter**

The device of Baxter comprises a heat exchanger 16, where a solution is circulated. However, in contrast to present claim 1, the device of Baxter does not comprise a zone comprising a static means to maintain supercooling in order to delay the appearance of crystals, as the solution circulating in the pre-cooler 16 of Baxter already contains crystals (*see e.g.*, Baxter, p. 5, line 14, "polymorphic transformation"; and p. 5, lines 16-19, "transformation of unstable and semi-stable polymorphic crystals to stable forms"). Thus, it can be concluded from the disclosure of Baxter that the solution already comprises crystals, and that the heat exchanger 16 does not delay the appearance of crystals. This is in contrast to the recitation in present claim 1.

Additionally, the term “undercooling” in Baxter is used only for a transformation from unstable or semi-stable form to a stable form of crystal (See Baxter, p. 5, line 19, “...transformation from **solid to solid**, applied to fat...”). This is in stark contrast to the presently claimed supercooling, which, as described above, refers to a **liquid without any crystals**. Baxter also does not disclose any means including a non-stick coating on at least one part of the internal walls of the tube of the heat exchanger, as recited in present claim 1. Moreover, in Baxter the means for allowing the transformation from an unstable state to a stable state is ultrasonic, and does not correspond to the supercooling rupture means, as recited in present claim 1 – *i.e.* a change of coating of the internal wall and/or a change of direction of the circulation of the solution and/or an obstacle to the circulation of the solution.

Thus, Baxter does not teach or suggest every element in present claim 1, or its corresponding dependent claims.

### **Windhab**

At the outset, the Applicant respectfully submits that Windhab is not prior art. However, the Applicant provides the below analysis for the sake of argument. The Office on p. 3 of the Office Action mentions the reference WO 00/72695, which is not mentioned anywhere on p. 2 of the Office Action. The Applicant presumes this was a typographical error, referring to Windhab<sup>1</sup>.

Windhab’s teachings do not remedy any of the deficiencies of the teachings of Aymard or Baxter. Windhab discloses a device comprising at least a pump 6 (*see* Windhab, Figure 3 and ¶[0051]) for circulation of a solution in a circuit of a heat exchanger 4, formed from at least one tube in contact with a cooling circuit 7. However, Windhab does not describe that the circuit of the exchanger comprises a zone comprising **static means to maintain supercooling** in order to delay the appearance of crystals. Specifically, the heat exchanger 4 is for the circulation of liquid chocolate. Windhab does **not** disclose **supercooling** in the circuit, and the liquid chocolate in the circuit (2, 6, 4) is not in a

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<sup>1</sup> The Applicant further points out that regardless of whether the Office meant to use WO 00/72695 as a separate reference, WO 00/72695 relates to teachings similar to the disclosure of Windhab, and thus suffers similar deficiencies to those of Windhab.

supercooled state, as recited in present claim 1. Accordingly, in contrast to the present claims, Windhab does not teach or suggest a static means to maintain supercooling or a non-stick coating on the internal walls of the heat exchanger.

In contrast to the present claims, Windhab explicitly states that the crystals appear in another circuit, comprising the shearing module 8 (*see* Windhab, Figure 3), and the means for creating the crystals are **not static**, but rotating elements (*See* Windhab, ¶[0059]). Also, contrary to the assertion on p. 3 of the Office Action, the mixer 3 of Windhab does not promote the formation of the crystals; it only mixes the liquid chocolate from the circuit (2, 6, 4) and the solution containing **pre-existing (already formed) crystals** (*See* Windhab, ¶[0060]).

Because Windhab's teachings do not remedy any of Aymard's or Baxter's deficiencies, one of ordinary skill in the art would not have had a reason to combine Windhab's teachings with either Aymard's or Baxter's teachings. Thus, the present claims are non obvious over the teachings of Aymard, Baxter, and/or Windhab.

### **Hartel**

Hartel's teachings do not remedy any of the deficiencies of the teachings of Aymard or Baxter. In fact, Hartel teaches away from the present claims. In Hartel's teachings, the steps of nucleation and crystal growth are separated (*see* Hartel, col. 5, lines 18-19). Accordingly, in stark contrast to the presently recited **static** supercooling rupture means, the disclosure of Hartel refers to a **dynamic** process (*see* Hartel, col. 6, lines 49- 50, "preferably, the energy input means is an agitator comprised of a plurality of impellers. The agitator rotates inside the nucleator"). Namely, only the means for crystal growth in Hartel are static (*see* Hartel, col. 5, lines 23-24).

Because Hartel's teachings do not remedy any of Aymard's or Baxter's deficiencies and in fact Hartel teaches away from the present claims, one of ordinary skill in the art would not have had a reason to combine Hartel's teachings with either Aymard's or Baxter's teachings. Thus, the present claims are non obvious over the teachings of Aymard, Baxter, and/or Hartel.

Therefore, at least in view of the foregoing, the Applicant respectfully requests that the rejections be withdrawn.

**CONCLUSION**

The Applicant believes that the present application is now in condition for allowance and respectfully requests favorable reconsideration of the application as amended is respectfully requested.

The Office is invited to contact the undersigned by telephone if a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, the Applicant hereby petitions for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 8-MAR-2010

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